DATA VALIDATION REPORT

Gold King Mine Long Term Monitoring

SAMPLE DELIVERY GROUP: 680-130717-1

Prepared by

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I. INTRODUCTION

Task Order Title:	Gold King Mine Long Term Monitoring
Project No.:	20408.012.001.0397.00
Sample Delivery Group:	680-130717-1
EPA Project Manager:	Steve Merritt
Weston Project Manager:	Mark Blanchard
TDD No.:	0001/1510-02
Matrix:	Water
QC Level:	Stage 2A
No. of Samples:	8
No. of Reanalyses/Dilutions:	0
Laboratory:	TestAmerica - Pensacola

Table 1. Sample Identification

Location ID	*Lab Sample Name*	*Matrix Type*	*Collection Date*	*Method*
A73_100316	680-130717-1	Water	10/3/16 12:00 AM	1631E
A75D_100316	680-130717-2	Water	10/3/16 12:00 AM	1631E
A75D_100316D	680-130717-3	Water	10/3/16 12:00 AM	1631E
AR19-3_100416	680-130717-4	Water	10/4/16 12:00 AM	1631E
AR2-7_100416	680-130717-6	Water	10/4/16 12:00 AM	1631E
AR2-7_100416D	680-130717-7	Water	10/4/16 12:00 AM	1631E
AR2-7a_100416	680-130717-5	Water	10/4/16 12:00 AM	1631E
FW-012_100216	680-130717-8	Water	10/2/16 12:00 AM	1631E

II. Sample Management

Anomalies regarding sample management are noted below. The samples were received intact at 18.4 °C. No initial preservation (including cooling) is required for this method. The chains-of-custody (COCs) were appropriately signed and dated by field and laboratory personnel. The shipping container custody seals were intact.

The following issue was noted:

- The organization was not identified in the signature portion of the COC for laboratory receipt.

Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. The associated value is the quantitation limit or the estimated detection limit for dioxins or PCB congeners.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit. The associated value is the sample detection limit or the quantitation limit for perchlorate only.
UB	The analyte was detected in the sample and in either the associated laboratory blank or field blank. If detected below the reporting limit (RL) the analyte result was reported as non-detected at the RL due to blank contamination. If detected above the RL, the analyte result was reported as non-detected at the reported result due to blank contamination.	The analyte was detected in the sample and in either the associated laboratory blank or field blank. If detected below the reporting limit (RL) the analyte result was reported as non-detected at the RL due to blank contamination. If detected above the RL, the analyte result was reported as non-detected at the reported result due to blank contamination.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
J+	Not applicable	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample, and may have a potential positive bias.
J-	Not applicable	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample, and may have a potential negative bias.

Qualifier	Organics	Inorganics
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
UJB	The analyte was detected in the sample and in either the associated laboratory blank or field blank; the analyte result was reported as non-detected at either the RL or the reported result. The reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The analyte was detected in the sample and in either the associated laboratory blank or field blank; the analyte result was reported as non-detected at either the RL or the reported result. The reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.

Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D was noncompliant.	Correlation coefficient is <0.995 or calibration was noncompliant.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination as indicated by the preparation (method) blank results.	Presumed contamination as indicated by the preparation (method) or calibration blank results.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
L1	LCS/LCSD RPD was outside control limits.	LCS/LCSD RPD was outside control limits.
Q	MS/MSD recovery was poor.	MS recovery was poor.
Q1	MS/MSD RPD was outside control limits.	MS/MSD RPD was outside control limits.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	ICPMS tune was not compliant.
T	Presumed contamination as indicated by the trip blank results.	Not applicable.
+	False positive – reported compound was not present.	Not applicable.
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination as indicated by the FB or ER results.	Presumed contamination as indicated by the FB or ER results.
F1	Field duplicate results were outside the control limit.	Field duplicate results were outside the control limit.
$	Reported result or other information was incorrect.	Reported result or other information was incorrect.

Qualifier	Organics	Inorganics
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
*II, *III	Unusual problems found with the data that have been described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Unusual problems found with the data that have been described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.

III. Method Analyses

A. Contract Laboratory Program Statement of Work for Inorganic Superfund Method 1631E - Low Level Mercury

Reviewed By: M. Hilchey
Date Reviewed: October 22, 2016

The samples listed in Table 1 for this analysis were validated based on the guidelines outlined in the *Quality Assurance Project Plan for U.S. EPA Region 8 CERCLA Site Assessment (2015)*; *Sampling and Analysis Plan/Quality Assurance Project Plan for Gold King Mine Release, Silverton, San Juan County, Colorado* (2015); *United States Environmental Protection Agency Contract Laboratory Program Statement of Work for Inorganic Superfund Methods; EPA Method 1631E;* and the *National Functional Guidelines for Inorganic Superfund Data Review* (2010).

- Holding Times: The analytical holding time, 28 days for low level mercury that has been oxidized in the sample bottle, was met.
- Analytical Method Blanks: No target analyte was reported in the method blank.
- Laboratory Control Samples (LCS): LCS/LCSD recoveries and the RPD were within laboratory control limits.
- Laboratory Duplicates: Laboratory duplicate analyses were not performed on a sample from this SDG.
- Matrix Spike/Matrix Spike Duplicate (MS/MSD): MS/MSD analyses were not performed on a sample from this SDG.
- Post Digestion Spike (PDS): No PDS analyses were reported in this SDG.
- Serial Dilution: There were no serial dilution analyses reported in this SDG.
- Field QC Samples: Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:
    - Field Blanks and Equipment Rinsates: No field blank or equipment rinsate samples were identified in this SDG.

- Field Duplicates: Samples A75D_100316 and A75D_100316D, and AR2-7_100416 and AR2-7_100416D were identified as field duplicate pairs. Results greater than the reporting limit (RL) had RPDs within the control limit of ≤30% and results less than RL were within the reasonable control limit of ±RL. The pairs were considered to be in good agreement.

Validated Sample Result Forms: 680-130717-1

Analysis Method 1631E

Sample Name A73_100316 **Matrix Type:** Water

Lab Sample Name: 680-130717-1 **Sample Date:** 10/3/2016

Analyte	Total/Dissolved	CAS No	Result Value	Reporting Limit	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	T	7439-97-6	0.88	0.5	0.2	ng/L			
Mercury	D	7439-97-6	0.39	0.5	0.2	ng/L	J	J	

Sample Name A75D_100316 **Matrix Type:** Water

Lab Sample Name: 680-130717-2 **Sample Date:** 10/3/2016

Analyte	Total/Dissolved	CAS No	Result Value	Reporting Limit	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	T	7439-97-6	0.87	0.5	0.2	ng/L			
Mercury	D	7439-97-6	0.35	0.5	0.2	ng/L	J	J	

Sample Name A75D_100316D **Matrix Type:** Water

Lab Sample Name: 680-130717-3 **Sample Date:** 10/3/2016

Analyte	Total/Dissolved	CAS No	Result Value	Reporting Limit	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	D	7439-97-6	0.45	0.5	0.2	ng/L	J	J	
Mercury	T	7439-97-6	0.83	0.5	0.2	ng/L			

Sample Name AR19-3_100416 **Matrix Type:** Water

Lab Sample Name: 680-130717-4 **Sample Date:** 10/4/2016

Analyte	Total/Dissolved	CAS No	Result Value	Reporting Limit	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	T	7439-97-6	0.91	0.5	0.2	ng/L			
Mercury	D	7439-97-6	0.2	0.5	0.2	ng/L	U	U	

Sample Name AR2-7a_100416 **Matrix Type:** Water

Lab Sample Name: 680-130717-5 **Sample Date:** 10/4/2016

Analyte	Total/Dissolved	CAS No	Result Value	Reporting Limit	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	T	7439-97-6	1.6	0.5	0.2	ng/L			
Mercury	D	7439-97-6	0.2	0.5	0.2	ng/L	U	U	

Sample Name AR2-7_100416 **Matrix Type:** Water

Lab Sample Name: 680-130717-6 **Sample Date:** 10/4/2016

Analyte	Total/Dissolved	CAS No	Result Value	Reporting Limit	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes

Analysis Method 1631E

Mercury	D	7439-97-6	0.2	0.5	0.2	ng/L	U	U
Mercury	T	7439-97-6	1.4	0.5	0.2	ng/L		

Sample Name AR2-7_100416D **Matrix Type:** Water

Lab Sample Name: 680-130717-7 **Sample Date:** 10/4/2016

Analyte	Total/Dissolved	CAS No	Result Value	Reporting Limit	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	T	7439-97-6	1.4	0.5	0.2	ng/L			
Mercury	D	7439-97-6	0.2	0.5	0.2	ng/L	U	U	

Sample Name FW-012_100216 **Matrix Type:** Water

Lab Sample Name: 680-130717-8 **Sample Date:** 10/2/2016

Analyte	Total/Dissolved	CAS No	Result Value	Reporting Limit	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	T	7439-97-6	0.96	0.5	0.2	ng/L			
Mercury	D	7439-97-6	0.2	0.5	0.2	ng/L	U	U	